Rocky Flats Environmental Technology Site

2-N93-ER-ADM-06.04

REVISION 1

MAP CONTROL

APPROVED BY: _____ / S.G. Stiger / 5-4-95

Director, Environmental Restoration Program Division — Print Name — Date

_____ / R.S. LUKER / 5.3.95

Quality Assurance Program Manager, Data Management and Reporting Services — Print Name — Date

DOE RFFO/ER Concurrence on file: ☐ Yes ☐ No ☑ NA

Environmental Protection Agency Approval Received: ☐ Yes ☐ No ☑ NA

Responsible Organization: Environmental Restoration Program Division Effective Date: 6/1/95

REVIEW BY THE FOLLOWING DISCIPLINES IS DOCUMENTED IN THE PROCEDURE HISTORY FILE:

Data Management and Reporting Services
Environmental Operations Management
Group 1 Closures
Radiological Engineering
Operable Unit 2 Closure
Operable Units 5, 6, and 7 Closures
Industrial Area OU Closures/D&D Team
Solar Ponds Project

USE CATEGORY 3

ORC review not required

The following have been incorporated in this revision:

94-DMR-002371

This procedure supersedes procedure 2-N93-ER-ADM-06.04, Revision 0

Periodic review frequency: 1 year from the effective date

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Change Number
1-18	6/1/95	

TOTAL NUMBER OF PAGES: 18

TABLE OF CONTENTS

1. PURPOSE

This procedure establishes the responsibilities and instructions for the:

- Creation, maintenance, and dissemination of Environmental Restoration Program Division (ERPD) computer generated spatial data
- Controlled distribution of hard-copy maps

The data and maps provide current and accurate source information used to support the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Resource Conservation and Recovery Act (RCRA) remediation activities.

2. SCOPE

This procedure applies to:

- All ERPD Rocky Flats Environmental Technology Site (Site) employees and subcontractors performing ERPD activities
- Spatial data used for ERPD mapping activities
- ERPD hard-copy maps

This procedure will ensure consistent accuracy and quality in accordance with QAPjP, Environmental Restoration QA Project Plan, Revision 0, Section 6.0, Document Control.

This procedure addresses the following topics:

- Identification of responsibilities
- Instructions for controlling spatial data
- Instructions for controlling hard-copy map distribution

This revision is a total rewrite and revision bars are omitted.

This procedure supersedes 2-N93-ER-ADM-06.04, Revision 0.

3. DEFINITIONS

Annotation. Descriptive text used to label spatial features.

Attribute. Alpha or numeric data describing geographic features or items related to geographic features. Attributes are stored in a tabular file or attribute table.

Attribute Table. A tabular file containing descriptive information about an object.

Change Control. The administrative means of documenting approved modifications or revisions to the spatial data.

Controlled Distribution List. A list maintained by a Spatial Data Management Organization (SDMO) that identifies individuals or organizations receiving spatial data set(s).

3. DEFINITIONS (continued)

Coordinate System. A system used to measure horizontal and vertical distances on a planar surface.

Coordinates. A pair of digits (x, y) used to reference map locations to ground locations.

Coverage. The naming convention used by Environmental Systems Research Institute's (Understanding GIS, The ARC/INFO Method) GIS software for digitally stored spatial data. Coverage is a set of data with a common theme, such as roads, which are stored as a unit. A coverage stores mapping features as primary features (such as arcs, nodes, polygons, and label points), secondary features (such as tics, map extents, links, and annotations), and associated feature attributes data/tables (such as names, classifications, and item descriptions).

Document Controlled Map. Maps for input into a controlled document.

Geographic Information System (GIS). An organized collection of computer hardware and software, geographic data, procedures, and personnel designed to capture, store, update, retrieve, manipulate, analyze, and display all forms of geographically referenced information.

Legend. The reference area on a map that lists and explains the colors, symbols, line patterns, shadings, and annotations used on the map. The legend also includes the scale, orientation, map projection, and descriptive map title(s).

Map. An abstract representation of physical features of a portion of the Earth's surface that is graphically displayed on a planar surface. Maps display spatial relationships among all geographic features and their annotations and maintain real world spatial accuracy for all items displayed.

Map Datum. A set of parameters and control points that define the three-dimensional shape of the earth (for example, North American Datum for 1927).

Map Generator. The person or organization using the spatial data set(s) to create hard-copy maps.

Map Originator. The person that requests the hard-copy map.

Map Projection. A systematic conversion of locations on the earth's surface from spherical to planar coordinates. The earth is three-dimensional; therefore, some method must be used to depict a map in two dimensions. A map projection is one component of the mathematical model that transforms the locations of features on the earth's surface to locations on a two-dimensional surface.

Media. The means by which electronic data are disseminated to the end-users.

NOC. Notice of change document.

3. DEFINITIONS (continued)

Originator of Data. The person or organization that requests the creation of a new spatial data set; this person becomes the data owner of the spatial data set.

Originator of Modified Data. The person or organization that requests the modification of an existing spatial data set.

Proof Map. A map showing unapproved spatial data or coverage used for quality assurance review and approval.

Production Spatial Data Set. Any spatial data set or coverage designated and managed by Site contractor staff within a computer software system (such as, ARC/INFO) where the accuracy, completeness, and consistency of display are required for more than one ERPD department or project.

Project Manager. The person responsible for overseeing an ERPD activity.

Real World Spatial System. The use of a common coordinate system to spatially register geographic data for the same geographic area. All the data are displayed with the correct spatial relationships and spatial accuracy that are observed in the real world. For example, roads and buildings are correctly placed on a map to represent their positions identically to the earth's surface.

Requestor. The person who requests the spatial data set(s).

Revision Date. The date that the spatial data set or coverage was put into production.

Revision Number. A unique reference number used to identify each new release of a production spatial data set or coverage because of a modification to the data. The revision number is compossed of a major and minor revision number (for example, 5.03, 5 is the major number and 03 is the minor number).

Site-Wide Distribution Map. A map to be distributed as a standardized map throughout the Rocky Flats Environmental Technology Site.

Spatial Data. Information about the location, the shape, and the relationships between geographic features that are typically stored as coordinates and topology.

Spatial Data Management Organization (SDMO). Any group or person which creates, maintains, and/or stores spatial data (such as, ERPD GIS). A computer software system may or may not be used to manage data.

Spatial Data Set. A set of spatial data with a common theme that is used synonymously with coverage. See coverage definition.

3. DEFINITIONS (continued)

Working Map. A map primarily used only by the Map Originator for review and preliminary planning.

4. RESPONSIBILITIES

4.1 ERPD Technical Publications

Distributes Notice of Change (NOC) documents to all individuals or organizations on the SDMO Controlled Distribution List when a production spatial data set has been created and/or modified.

4.2 Project File Center (PFC)

Maintains a copy of the Quality Control (QC) data documentation for each production spatial data set.

4.3 Spatial Data Management Organization (SDMO)

Maintains a list of the most current production spatial data sets.

Performs all production spatial data set maintenance.

Provides proof maps of the spatial data set to the Originator of Data for review and approval.

Documents all changes to the production spatial data sets.

Obtains approval from the Originator of Data for new or changed production spatial data sets.

Provides the SDMO Controlled Distribution List for each production data set to ERPD Technical Publications.

Provides QC data documentation for each production spatial data set to the PFC.

4.4 Originator of Data

Provides Real World Spatial Coordinate System data, attributes, and/or annotations to the SDMO for the features to be captured into a new spatial data set.

Reviews and approves the proof map of the spatial data set.

Communicates any changes of the spatial data set to the appropriate SDMO.

Approves changes made to the existing spatial data set for which he/she owns.

4.5 Originator of Modified Data

Provides Real World Spatial Coordinate System data, attributes, and/or annotations to the SDMO for the features to be captured into a modified spatial data set.

Seeks approval from the Originator of Data to make modifications to the spatial data set.

Reviews and approves the proof map of the modified spatial data set.

4.6 Map Generator

Generates the map in accordance with (IAW) the Map Originators instructions and GIS Published Mapping Standards.

Provides a document identification number, in concurrence with ERPD Technical Publications, for Site-wide distributed maps and records the number in the map legend.

Provides PFC with a copy of the Site-wide distributed maps.

4.7 Map Originator

Determines the use of the hard-copy map from one of the three following options:

- Working map
- Controlled document map
- Site-wide distributed map

Provides a written request to the Map Generator for a hard-copy map and identifies the type required.

4.8 Project Manager

Ensures that any subcontractors under his/her control follow these procedures when creating or using production spatial data.

Ensures that all personnel, including subcontractors, are trained and qualified to perform the duties, tasks, and responsibilities described in this procedure.

Ensures that all core and ERPD-specific training has been completed and documented and that copies of all documentation have been forwarded to the ERPD training files.

4.9 Quality Assurance Manager

Ensures compliance with the quality assurance requirements as relates to Map Control.

4.10 Requestor

Requests latest revisions of the Production Spatal Data Set from the SDMO.

5. INSTRUCTIONS—CONTROLLING SPATIAL DATA

NOTE 1 *A flow diagram shown in Appendix 1, Spatial Data Flow Diagram for Map Control, summarizes the flow of spatial data as described in this Section.*

NOTE 2 *Spatial data set identifiers are assigned and maintained by the SDMO.*

5.1 Identification and Preparation of New Spatial Data

NOTE *All documentation is acceptable in memorandum (memo), randum letter, or electronic form.*

Originator of Data

[1] Document the following information for the creation of the new spatial data set and/or attribute data:

- Origination date of data
- Complete description of the new data
- Source of the data
- Operational Unit (OU) with which the information is/are associated, or if sitewide
- Real world spatial coordinates for data
- Coordinate system, including map datum
- Means the location of the spatial data is derived (for example, surveyed, or digitized)
- Attributes and annotations for the features being mapped

[2] Submit the above documentation, along with the data, to the SDMO for processing.

SDMO

[3] Prepare new spatial data set using spatial data and/or associated attribute tables.

[4] Document the QC information of the new spatial data set (see Appendix 2, Quality Control Parameters for Spatial Data), and assign a unique data set identifier.

[5] Prepare a proof map(s) of the new information for Originator of Data approval.

Originator of Data

[6] Approve the hard-copy proof map(s).

[A] **IF** the proof map fails the approval review process,
THEN return the proof map to the SDMO for additional processing (see step 3).

SDMO

[7] Place the new spatial data set into "production."

[8] Prepare NOC detailing the addition of the new spatial data set.

[9] Submit the QC data documentation for the new spatial data set to the PFC.

5.1 Identification and Preparation Of New Spatial Data (continued)

SDMO (continued)

[10] Submit NOC and SDMO Controlled Distribution List to ERPD Technical Publications for controlled distribution.

ERPD Technical Publications

[11] Update the master SDMO Controlled Distribution List for the spatial data set.

[12] Distribute the NOC documentation IAW the SDMO Controlled Distribution List.

5.2 Request For Spatial Data

NOTE *Spatial data are disseminated through electronic transfer.*

Requestor

[1] Request in writing the latest revision of the production spatial data set(s) from the SDMO.

SDMO

[2] Copy the requested spatial data set to the appropriate media.

[3] Create a hard-copy description of the requested spatial data set.

[4] Generate a distribution cover letter.

[5] Deliver the cover letter, media, and the hard-copy description of the spatial data set to the requestor, and obtain written acknowledgement receipt of the requested data.

[6] Notify ERPD Technical Publications of new requestors.

ERPD Technical Publications

[7] **IF** notified by the SDMO of a new requestor,
THEN update the SDMO Controlled Distribution List.

5.3 Change or Revision Control to an Existing Spatial Data Set

Originator of Modified Data

NOTE *All documentation is acceptable in memo or letter form.*

[1] Obtain written approval for all changes to spatial and/or attribute data from the Originator of Data.

5.3 Change or Revision Control to an Existing Spatial Data Set (continued)

Originator of Modified Data (continued)

[2] Document the following information for the update, modification, or revision of an existing spatial data set:

- Origination date of modified data
- Complete description of the update, modification, or revision
- Source of the update, modification, or revision
- OU(s) with which the information is/are associated, or if sitewide
- Map coordinates for the update, modification, or revision data
- Coordinate system
- Means the location of the spatial data is derived (for example, surveyed)
- Attributes and annotations for the features being mapped

[3] Submit the above documentation, along with the update, modification, or revision data, to the SDMO for processing.

SDMO

[4] Check for or obtain written approval for all changes to the spatial data set from the Originator of Data.

[5] Apply changes IAW the request.

[6] Submit to the Originator of Modified Data a proof map of the new information for approval.

Originator of Modified Data

[7] Approve the hard-copy proof map(s).

[A] **IF** the proof map fails the approval review process,
THEN return the proof map to the SDMO for additional processing (see step 5).

SDMO

[8] Place the revised spatial data set into "production."

[9] Prepare an NOC for all Originators detailing the change.

[10] Submit the QC data documentation for the revised data to the PFC.

[11] Submit the SDMO Controlled Distribution List and an NOC to ERPD Technical Publications for controlled distribution.

ERPD Technical Publications

[12] Update the master SDMO Controlled Distribution List for a spatial data set.

[13] Distribute an NOC documentation IAW the SDMO Controlled Distribution List.

6. INSTRUCTIONS—CONTROLLING HARD-COPY MAP DISTRIBUTION

NOTE *See Appendix 3, Hard-Copy Map Distribution Flow Diagram, for a flow diagram of hard-copy maps.*

Map Originator

[1] Determine use of the hard-copy map from three options:

- Working Map
- Map for a Controlled Document
- Site-wide Distributed Map

[2] Submit a written request with the map use option identified to the Map Generator for creating a hard-copy map.

Map Generator

[3] Create a hard-copy map per request of Map Originator and IAW Appendix 4, GIS Published Mapping Standards.

[4] Assign and record a document identification number on the map prior to distribution if a Site-wide distributed map.

The document identification number is in concurrence with ERPD Technical Publications and is normally recorded within the map legend.

[5] Provide PFC a copy of the map if a Site-wide distributed map.

[6] Deliver the map to the Map Originator.

7. RECORDS

Management of all records is consistent with 1-77000-RM-001, Records Management Guidance for Records Sources.

NOTE *The Records Source could be the Originator of Data, the Originator of Modified Data, the Requester, or personnel from the SDMO.*

Records Source

[1] Ensure that the original and one copy, as required, of the following quality-related records are transmitted to the ERPD PFC IAW 2-G18-ER-ADM-17.01, Records Capture and Transmittal:

- QC data documentation for the production spatial data sets
- Letters or memos for an NOC
- SDMO Controlled Distribution List
- Hard-copy of the Site Distribution Map(s)

Submission of record copies to the ERPD PFC is IAW Administrative Record requirements, as defined in 2-S65-ER-ADM-17.02, Administrative Record Document Identification and Transmittal.

There are no nonquality records generated by this procedure.

8. REFERENCES

QAPjP, Environmental Restoration Site-Wide QA Project Plan

Rocky Flats Interagency Agreement (IAG), January 22, 1991

Understanding GIS, The ARC/INFO Method, Revision 6.

1-77000-RM-001, Records Management Guidance for Records Sources

2-G18-ER-ADM-17.01, Records Capture and Transmittal

2-S65-ER-ADM-17.02, Administrative Record Document Identification and Transmittal

APPENDIX 1
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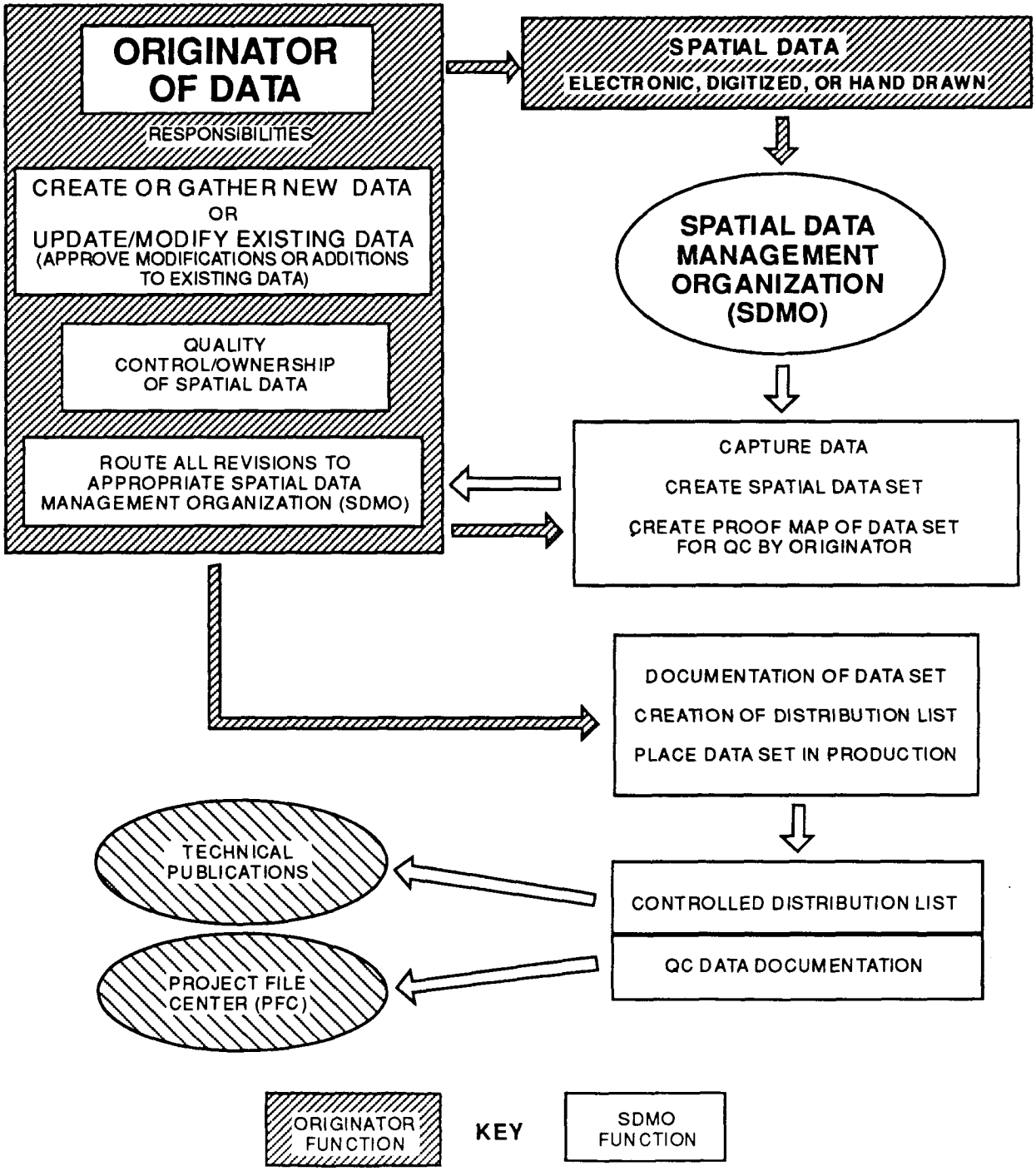
SPATIAL DATA FLOW DIAGRAM FOR MAP CONTROL



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QUALITY CONTROL PARAMETERS FOR SPATIAL DATA

a. Overview description and purpose of the data

b. Extent of data

c. Origination date of the new data

d. Revision date if date is modified

e. Source of new data

f. Source of modified data

g. Owner of data

h. Coordinate System (and zone, central meridian, or standard parallels)

i. Coordinate Units

j. Datum (such as, North American Datum for 1927)

k. Scale of source data

l. Method for coordinate capture (such as, surveyed, GPS, digitized, etc.)

m. Identification of all attributes associated with spatial features

n. Format of stored data (such as, ARC/INFO, DXF, IGES, etc.)

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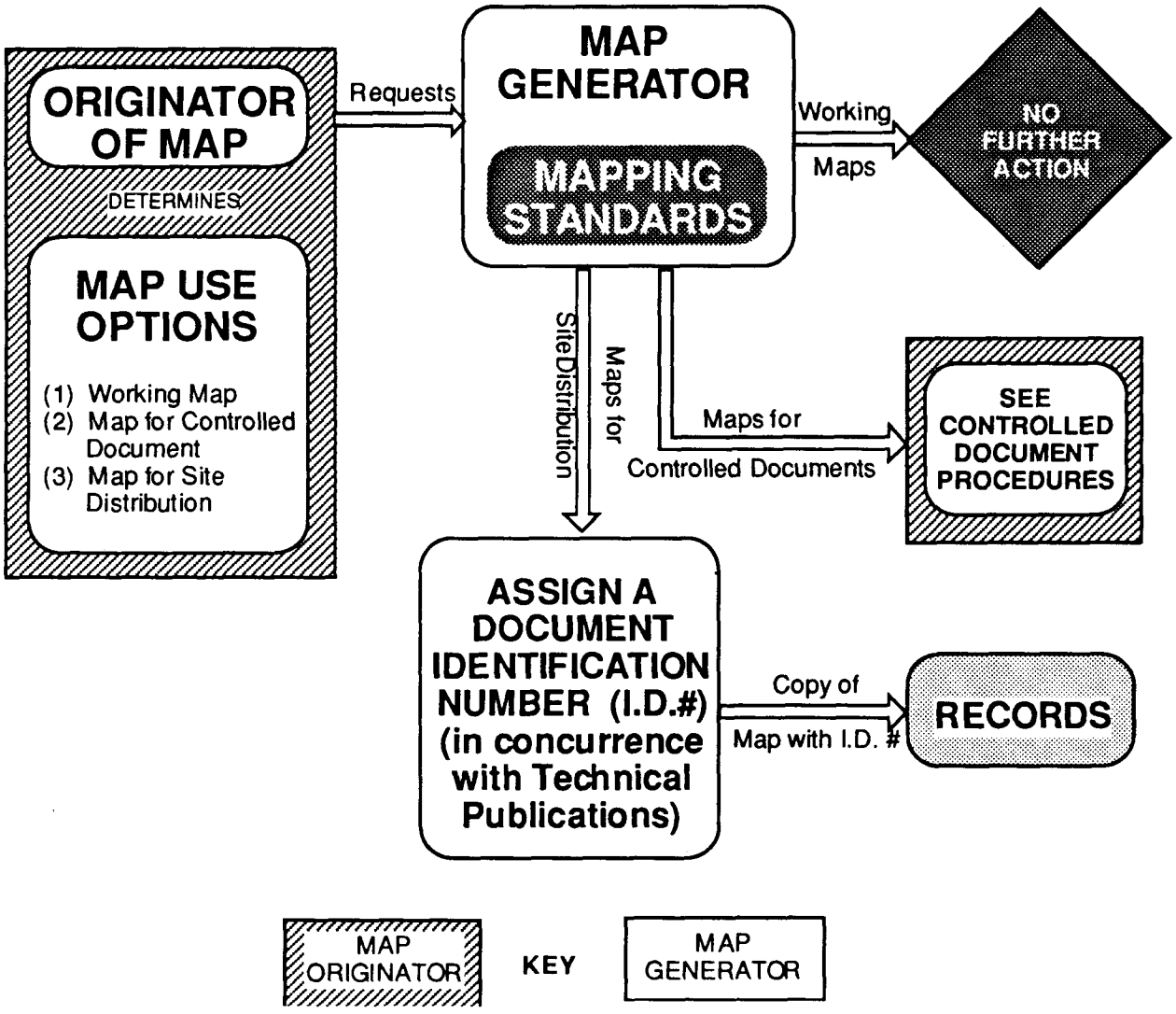
HARD-COPY MAP DISTRIBUTION FLOW DIAGRAM



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GIS PUBLISHED MAPPING STANDARDS

1. Purpose

   The purpose for developing computer mapping standards is to:

   - Establish conformity in computer-generated maps that are created by the Rocky Flats Environmental Technology Site (Site) and its subcontractors for the Environmental Management projects.

   - Simplify map reproduction between the Site and its subcontractors.

2. Scope

   The mapping standards defined in this outline are to provide users with a minimal set of criteria for creating computer-generated maps. These standards will apply to all Site departments and its subcontractors that generate maps for the Environmental Management projects. The standards do not apply to computer-aided design (CAD) drawings.

3. Standards

   The standards for creating computer-generated maps follow a presentation format consisting of the following three areas.

   - Map Presentation Area – The area that contains the information that geographically represents the geographic description of the Site project area.

   - Border Presentation Area – The outer perimeter of the map area. Within the border area, the XY coordinate locations are posted for location reference. Optionally, the coordinate locations are posted at the four corners of the map. Posting the coordinates at the corners is recommended for ease of reproducing the exact area of the map.

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- Legend Presentation Area – The area that is associated with the map that minimually contains the following information:

  — Map Description Title(s)

  — North Arrow

  — Map Scale. Scale that is defined by the use of a scale bar with the recommendation that text also be used.

  — Map Projection and Datum. Coordinate system and zone of map. Recommended projection is the State Plane in the Colorado Central Zone, and the datum is the North American Datum for 1927 (NAD27).

  — Map Author or Client (optional).
  "Prepared By: (Company)." Used to identify the author of the map (optional).
  "Prepared For: (Company or DOE)." Used to identify the client.

  — Map Date. Date map was generated.

  — Rocky Flats Environmental Technology Site (Site). Reference the facility as "DOE Rocky Flats Environmental Technology Site."

  — Map Code. Unique number that is project specific. Code is used for tracking purposes on Site-wide distributed maps.

  — Data Source. The data element, the originator of the data element, and the date (year) of the creation of the data element describe the data source within the legend. If the space permits within the legend, all features are represented within the map area. If space is not available, only those main features are represented within the map area (for example, Hydrography - USGS, DLG; 1988).